

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to FIGS. 1-5. These sheets, which include FIGS. 1-5, replace the original sheets including FIGS. 1-5. In FIGS. 1-5, the hand drawn diagrams, numbering, etc. have been replaced with formally drafted diagrams, numbering, etc.

Attachment: Replacement Sheets (i.e., 1/7 to 5/7)

Annotated Sheets Showing Changes (i.e., 1/7 to 5/7)

REMARKS/ARGUMENTS

The Examiner has objected to FIGS. 1-5 of the drawings for being "drawn by hand". The enclosed replacement sheets for FIGS. 1-5 include formally drafted diagrams, numbering, etc.

Claims 22-44 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 6,727,910 B2. The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other. The Examiner further states that the Applicant may file a terminal disclaimer to overcome a provisional rejection based on statutory double patenting rejection (see page 7 of the Office Action). The Applicant thanks the Examiner accordingly.

The Examiner has stated that Claims 26, 30, and 40 contain allowable subject matter and would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims (see page 7 of the Office Action). The Applicant thanks the Examiner accordingly.

Please note that there is a typographical error in Claim 44. Claims 44 should depend from Claim 43 rather than from Claim 37. Claim 44 has been amended accordingly. No new matter has been entered by this amendment.

With respect to Claim 43, the Examiner states on page 7 of the Office Action that the claim's scope is similar to that of Claim 1 of U.S. Patent No. 6,727,910 B2. The Applicant respectfully disagrees. Claim 43 is for a method for determining distance on an undistorted surface between a first point X_1 and a second point X_2 on a distorted surface in a detail-in-context presentation. In contrast, Claim 1 of U.S. Patent No. 6,727,910 B2 is for a method for inverting a distorted surface in a detail-in-context presentation. The claims are therefore directed toward different embodiments of the invention. Consequently, the Applicant respectfully requests that the Examiner's rejection of Claims 43-44 for double patenting be withdrawn.

With respect to Claims 22-42, and also with respect to Claims 43-44 if necessary, in order to overcome the Examiner's double patenting rejection, the Applicant encloses herewith a completed Terminal Disclaimer form (PTO/SB/26).

In view of the Examiner's comments with respect to Claim 30, new independent Claim 45 has been added. New Claim 45 includes the relevant limitations of previously presented Claims 22, 23, 28, 29, and 30, as suggested by the Examiner. As new Claim 45 includes the relevant limitations of previously presented Claims 22, 23, 28, 29, and 30, the Applicant believes that new Claim 45 is patentable.

In view of the Examiner's comments with respect to Claim 40, new independent Claim 46 has been added. New Claim 45 includes the relevant limitations of previously presented Claims 39 and 40, as suggested by the Examiner. As new Claim 46 includes the relevant limitations of previously presented Claims 39 and 40, the Applicant believes that new Claim 46 is patentable.

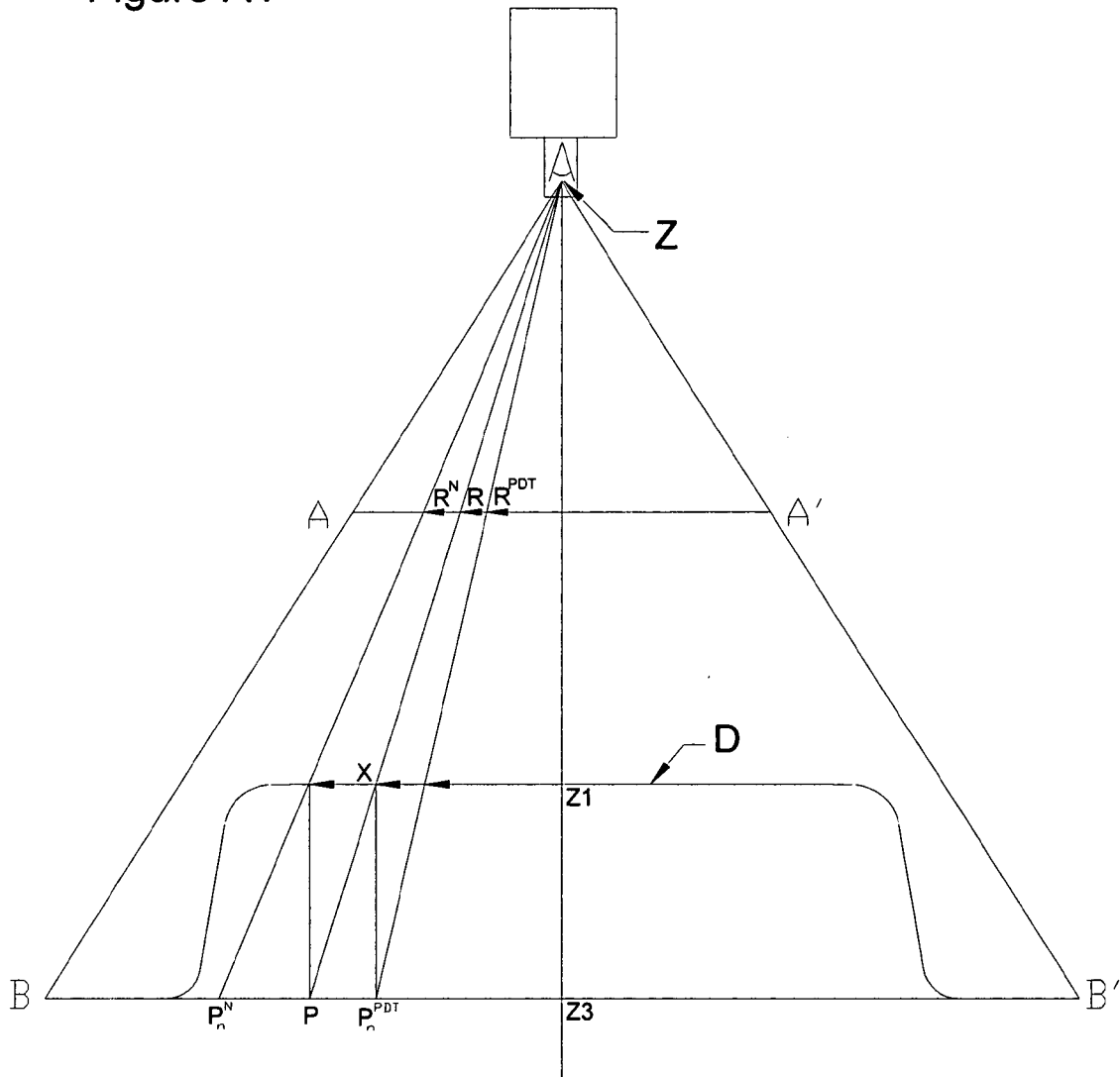
In further view of the Examiner's comments with respect to Claim 40, new independent Claims 47-49 have been added. New Claims 47-49 are directed toward method, system, and article embodiments relating to the subject matter of new Claim 46. The Applicant believes that new Claims 47-49 are patentable.

No new matter has been entered by the above claim additions.

The Examiner has requested clarification of the status of "Figure A1" which was filed with the Applicant's preliminary amendment of April 7, 2004. In response, Figure A1 was provided with the preliminary amendment of April 7, 2005 to provide support and illustration for the arguments presented therein with respect to the patentability of the amended claims. Figure A1 should not be considered as a part of the application itself.

For completeness, Figure A1 is provided below followed by the arguments that the Applicant presented in the Applicant's preliminary amendment of April 7, 2004.

Figure A1



“During prosecution of the parent application, the Examiner rejected claims 1-6, 8, 9, and 14-20 of that application under 35 U.S.C. 102 as being anticipated by United States Patent No. 6,416,186 to Nakamura ("Nakamura"). In addition, the Examiner rejected claims 7 and 11 of the parent application under 35 U.S.C. 103(a) and being unpatentable over Nakamura.”

“The Applicant has carefully reviewed Nakamura and believes that it neither teaches nor suggests the invention defined in new claims 22-44. Accordingly, the Examiner is respectfully requested to consider new claims 22-44 in view of the following comments.”

“The Applicant's invention provides a method, system, computer program product, and article having a computer readable modulated carrier signal for inverting detail-in-context presentations. On the other hand, Nakamura is directed toward a projection display unit that corrects image distortion. Thus, the function of Nakamura is fundamentally different than that provided by the Applicant's invention. While the method described in Nakamura may be appropriate for projector image correction, the Applicant believes that the Nakamura method yields incorrect results for the case of detail-in-context presentation inversion. As such, Nakamura may be considered as a teaching away from the method of the Applicant's invention.”

“In particular, while image projection for a projector such as an LCD projector as described in Nakamura and detail-in-context presentations using distortion functions such as described by Carpendale (Carpendale, Marianne S. T., *A Framework for Elastic Presentation Space* (Burnaby, British Columbia: Simon Fraser University, 1999)) both involve the use of perspective projection, the respective projections are distinct and serve different functions. A detail-in-context presentation is not invertible in the general case using the Nakamura projector correction method and such a presentation is fundamentally different from that of Nakamura. In fact, the method described in Nakamura, while correct for the case of projector output image correction, actually yields an incorrect result for the inversion of a detail-in-context presentation. This is illustrated in Figure A1 enclosed and is explained in more detail below. Furthermore, the initial approximation point **Z3** shown in FIG. 5 of Nakamura is not coincident with point P_i (i.e., P_0 160 in FIG. 1 of the present application) of new claim 22. In addition, the subsequent steps of the inversion method of new claim 22 are different from those described by Nakamura.”

“First consider the simple case shown in Figure A1 (enclosed) in which the optical axis of a projector (shown at the top of the figure) is collinear with a line from the viewer to the center of the output image. This is similar to FIG. 4 of Nakamura but is a simpler case in that the projector axis and reference viewing line to the image center are collinear. Now, define initially the point **R** on the image output surface (such as a liquid crystal display (LCD)) through **A-A'** and normal to the page for the projector, through which light rays from the projector pass onto the ultimate projection surface **D**, which may be taken as a non-planar surface in general. **D** represents a projection surface for the LCD projector to project onto, and is distorted above the desired projection surface **B-B'** so as to be closer to the projector than desired. To allow direct

comparison with a detail-in-context presentation, the same surface **D** shall be used to represent the distortion surface for a detail-in-context presentation such as defined by Carpendale. Thus, in Figure A1, the surface **D** may represent the simple case of a detail-in-context lens with focus (i.e., **F 133** in FIG. 1 of the present application) centered on the optical axis. Note, however, that the detail-in-context point displacement vector from a specific point on the reference plane (through **B-B'** normal to the diagram) to the corresponding displaced point on **D** is not in the general case parallel to the optical axis, nor is it generally parallel to the line from the viewpoint to the point to be inverted."

"Now, consider the point **R** on the image output surface. The projector projects **R** onto point **X** on surface **D**. Ideally, if **D** were an ideal undistorted surface at the desired projection distance, it would be coincident with **B-B'**. However, since **D** is closer to **A-A'**, the distance from **R** to the optical axis through **Z-Z1** is less than desired, and qualitatively to the viewer, a line from **R** to the optical axis projected onto **D** would be shorter than desired. This is a similar shortening effect to that seen, for example, when a slide projector is moved closer to a projection screen. To correct for this effect, the method in Nakamura correctly (for the purpose of projector image adjustment) repositions point **R** to the point **R^N** at a greater distance from **Z**. **R^N** now projects to a position on the projection surface corresponding to the desired projected length, and the viewer sees the desired image size."

"However, while appropriate for the projector image output correction, **R^N** is not the inversion point required to invert point **X** in a detail-in-context presentation. Rather, the correct inversion of such a presentation corresponds to computing the point **P_n^{PDT}** on **B-B'**, or its corresponding point **R^{PDT}** on **A-A'**, such that the detail-in-context displacement of **P_n^{PDT}** yields point **X** on **D**, seen as point **R^{PDT}**. (Generally, in a detail-in-context presentation, planes **A-A'** and **B-B'** are coincident, but in Figure A1, they are shown separated, for clarity and for comparison with Nakamura.) As shown in Figure A1, **R^{PDT}** and **R^N** are not coincident; the method of Nakamura would compute a correction that increases the distance **R-Z** rather than decreasing it. Such an increase is certainly appropriate as the correction of a projector image, but does not yield the desired detail-in-context presentation inversion point **R^{PDT}**, which falls between **R** and the optical axis. The computation in Nakamura is also generally different with respect to magnitude

to that desired for inverting a detail-in-context presentation and does not take into account detail-in-context presentation capabilities such as detail-in-context folding as describe by Carpendale.”

“Enclosed Figure A1 further shows that the Nakamura initial approximation point **Z3** is not the same as the initial detail-in-context inversion point approximation **P** (i.e., **P₀ 160** in FIG. 1 of the present application) of the Applicant's method. **Z3** is on the optical axis **Z-Z1**, but the Applicant's initial approximation starts from the off-axis point **P**, and subsequent approximations proceed as new points **P_i** on the line **B-B'** perpendicular to the optic axis rather than along the optical axis. Furthermore, the length along the optical axis corresponding to **Z-Z3** that is adjusted to give new tentative reference surfaces in Nakamura is actually not an adjustable variable within a given detail-in-context presentation since the distortion function **D** and the viewing frustum height are predetermined.”

“Referring to FIG. 1 of the present application, it is illustrative to review a representation of a more typical detail-in-context presentation. In this case, the lens **130** is not located on the optical axis of the viewing frustum **120** and has also undergone folding (as described by Carpendale) such that the “viewer aligned vector” **F₀-F 131** describing the direction of displacement of the image points towards **D** has been tilted away from the viewpoint RVP **140**. In this case, the method of Nakamura is clearly inapplicable, since it deals only with the magnitude and inclination of the distortion surface or physical surface **D** itself, whereas the displacement direction for a detail-in-context presentation also needs to be considered for correct inversion, such as is accomplished by the Applicant's method.”

“In view of the foregoing, and in summary, the Applicant believes that new claim 22 is patentable over Nakamura. The Applicant further believes that new claims 23-36 being dependent on claim 22 are also patentable over Nakamura.”

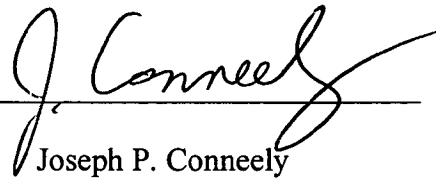
“Please note that new claims 37-38, 39-40, 41-42, and 43-44 for a system, a computer program product, an article having a computer readable modulated carrier signal, and a method for determining distance, respectively, have been added. These claims are directed toward embodiments that implement the method of claims 22-36 and are supported by pages 8-9 of the specification, FIG. 6, and by original claims 20 and 21. The Applicant believes that new claims 37-44 are also patentable over Nakamura.”

The Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

OGILVY RENAULT LLP

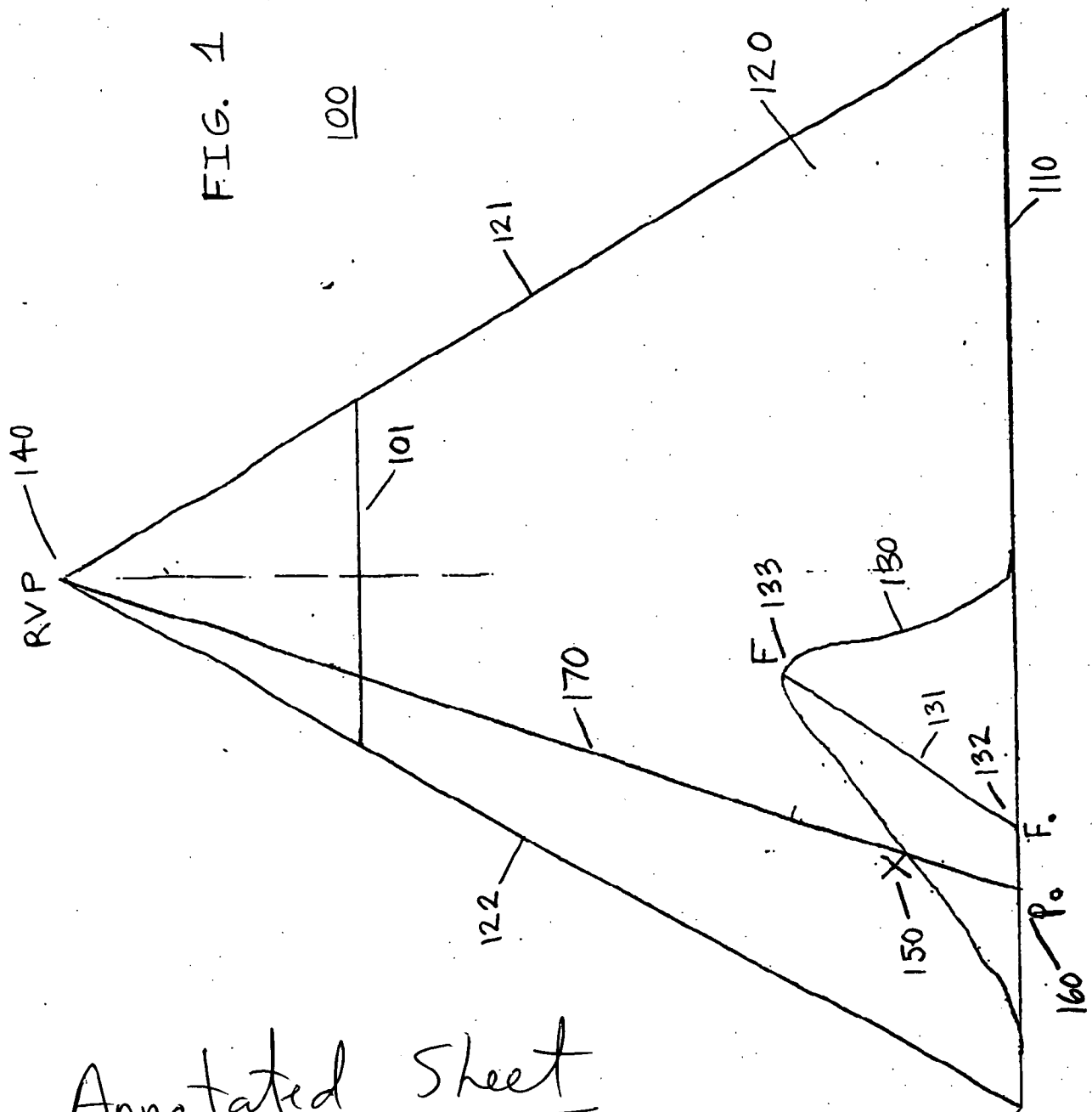
Date: August 4, 2005

By 

Joseph P. Conneely
Registration No. 54,883
Telephone: (416) 216-2993
Fax: (416) 216-3930

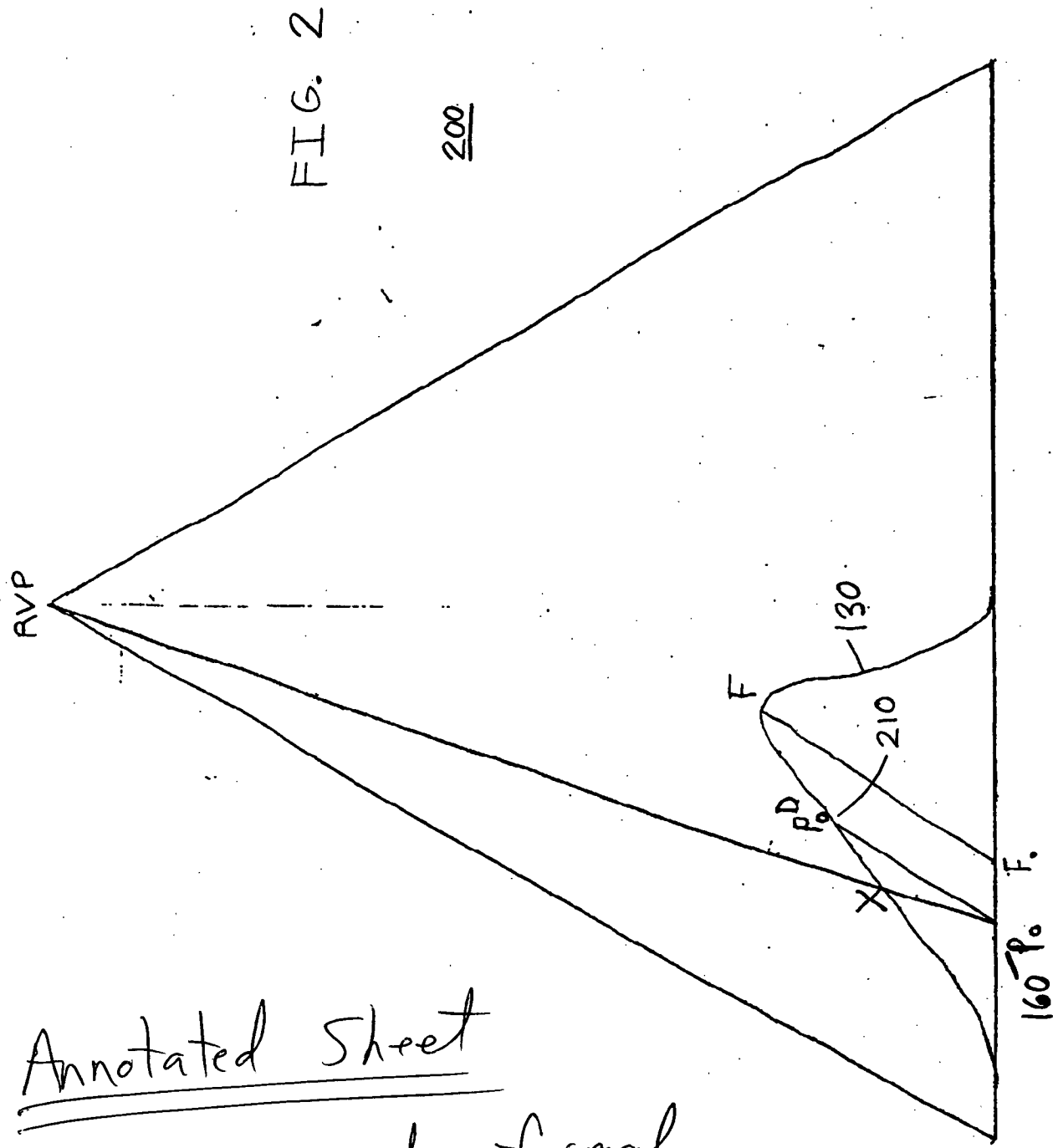
OGILVY RENAULT LLP
1981 McGill College Avenue
Suite 1600
Montreal, Quebec, Canada
H3A 2Y3

Enclosures



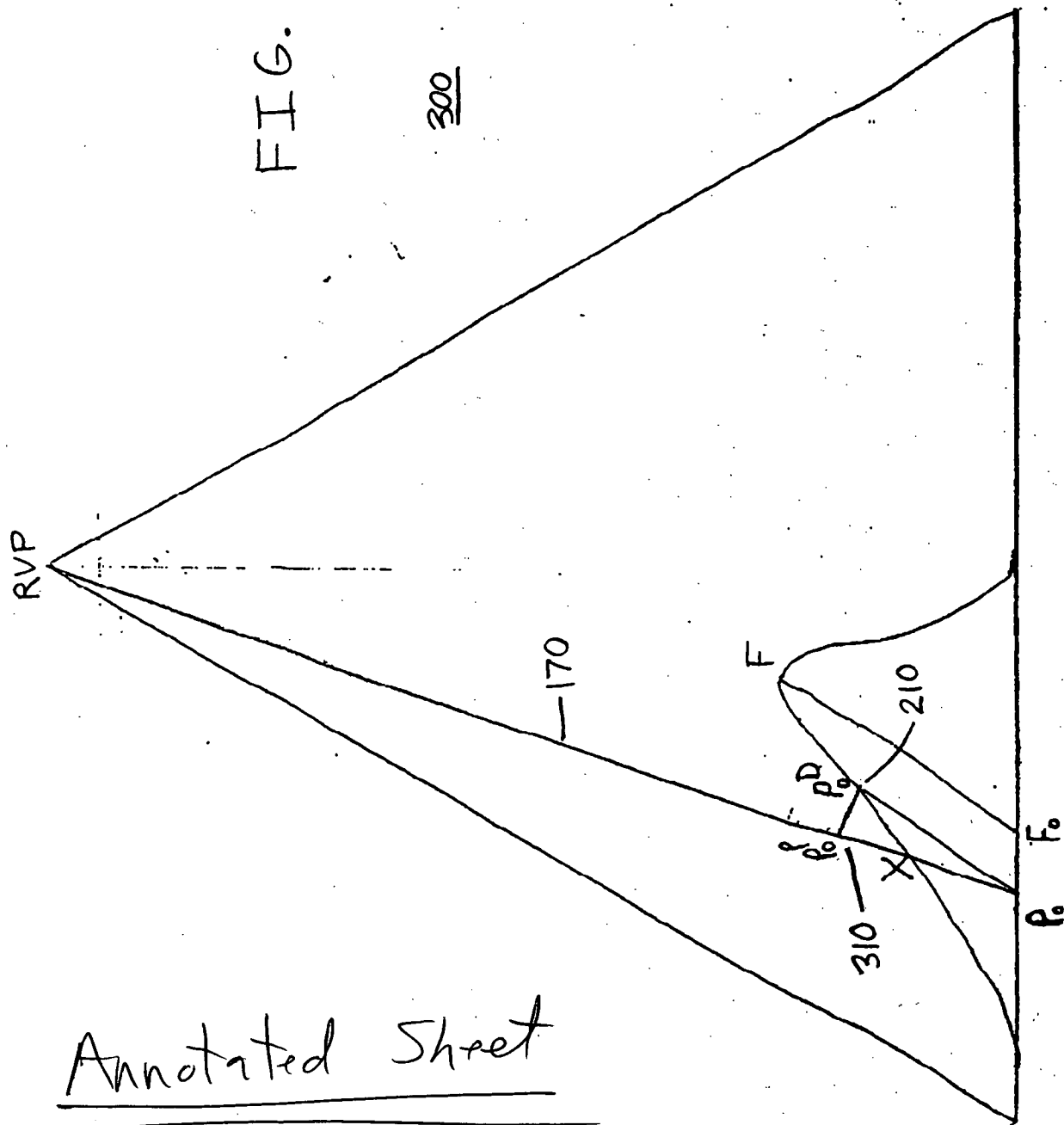
Annotated Sheet

Drawing made formal.



Annotated Sheet

Drawing made formal.



Annotated Sheet

Drawing made formal.

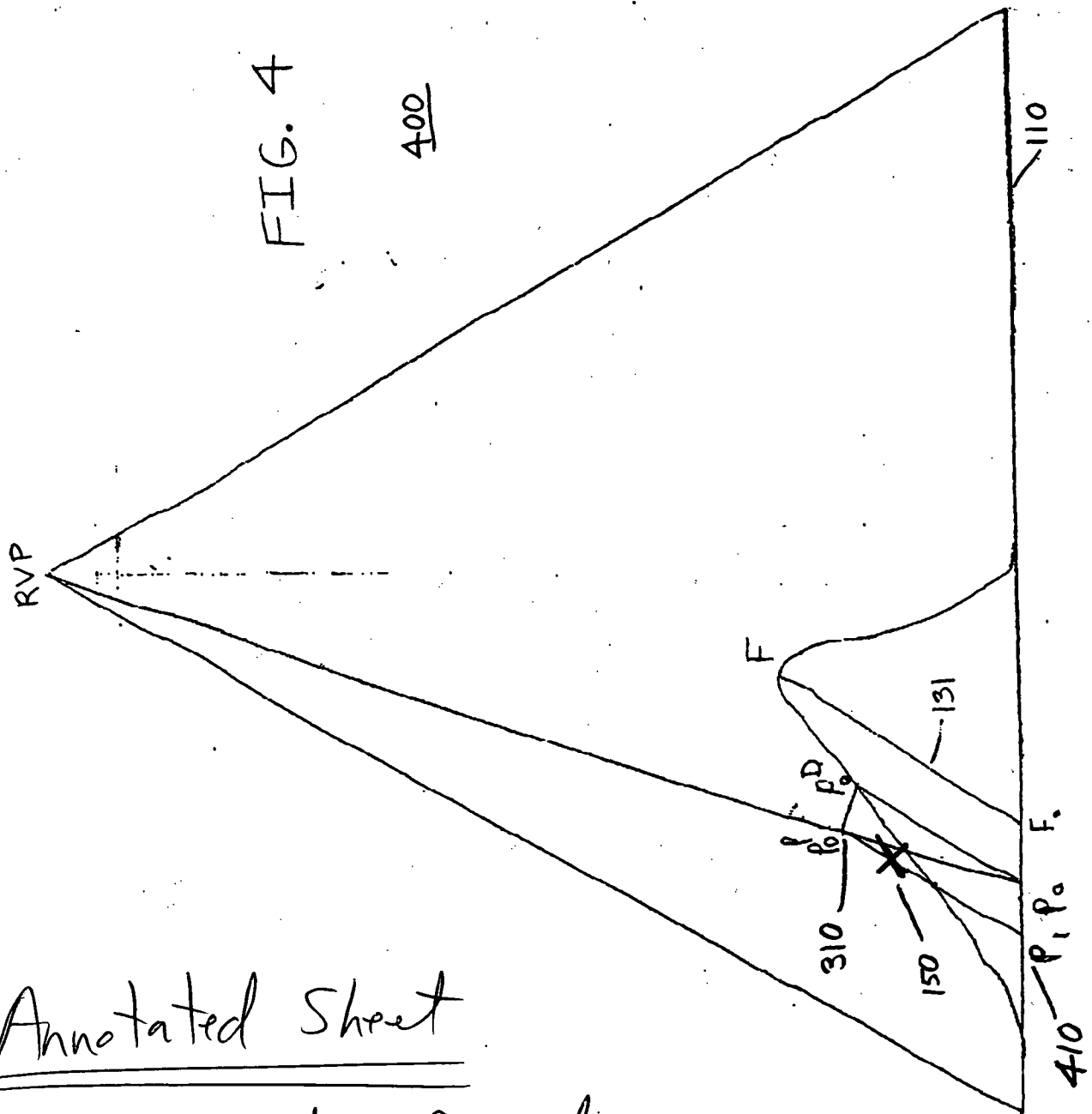
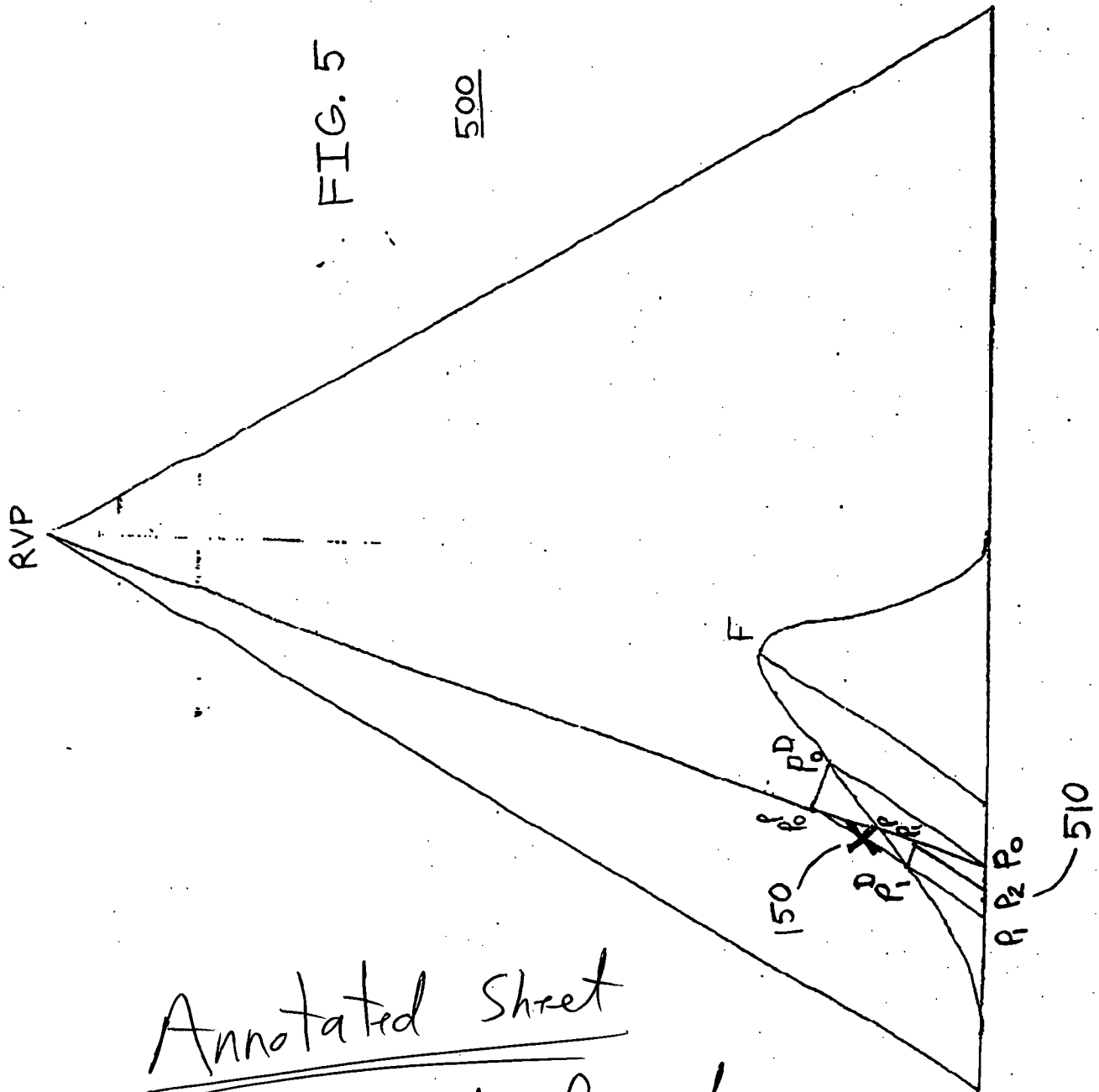


FIG. 4

400

Annotated Sheet

Drawing made formal.

$$\begin{array}{r} 500 \\ \hline \end{array}$$


Annotated Sheet
Drawing made formal.